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EDITORIAL NOTES

TO-DAY IN WALES

THE proceedings at a meeting of gas men in Cardiff will be found reported on later pages of this issue of the "JOURNAL."

We are passing through a period in which the experiences of one person to-day are unusually likely to be the experiences of another man to-morrow, and so it is a time in which the interchange of these experiences, and the detailing of measures adopted to meet unfamiliar emergencies, must possess peculiar value. As, therefore, the bulk of the time available was devoted to this, it is well that a large number of members found it possible to attend.

While attention is, of course, being given to plans for dealing with a future regarding the problems of which even the farthest sighted of us can entertain no certain conception, the troubles and tribulations of the present are only too evident to all. Whereas the present can in no way be claimed to depend upon the future, the future must be influenced by the present. And the present? Well, so far as the ordinary, every-day working of the Gas Industry is concerned, the meeting in Cardiff was informative also. Not that the information was particularly startling; the difficulties of the moment are general. But some facts will bear an extraordinary amount of repetition; and the troubles referred to by the President, Mr. R. L. Aspinall, of Barry, are serious. Whatever may be the conditions which the future is to present to us, there can hardly be a doubt that one of the best means of preparing to meet them is by maintaining the present operations of the Industry at the highest practicable level of efficiency. Even in wartime, a certain kind of "home life" remains, and there are, of course, any number of new and extended applications of gas to industrial and communal purposes. Gas has a long and honourable record, which it will strive its utmost to maintain, but it does ask that in this striving—so important for the welfare of the Nation, both now and later on—there shall be forthcoming all the assistance that can reasonably be afforded. After all, as the President said, "we are an essential Industry to the life of the Nation," and this being so, he can hardly be wrong in trusting, and believing, that "we shall be given fair consideration by those in authority."

One other circumstance which marked the meeting was the tribute paid to Mr. H. D. Madden, who has thrice occupied the Presidential Chair of the Association, and who, beyond the value of his abilities as an Engineer and as an Organizer, has made for himself in the affections of the members a place that will never again be vacant. His absence through illness was the single regretted feature of the meeting.

SMOKE AND RECONSTRUCTION

A FOREMOST aim of any post-war plan of reconstruction must be the elimination of smoke from our towns and cities, for which reason we are glad to give prominence to a "deferred use" fund which the National Smoke Abatement Society is launching, and whose past endeavours have always been supported by the "GAS JOURNAL." "For the war effort and for reconstruction" is the keynote of the present dual-purpose appeal. Faced with the problem of an income diminished because of war conditions, and with the prospect of intensive work as soon as peace is restored and the work of reconstruction begins, the Society has started a "Defence Bond Fund" to help the national effort now and help the campaign for clean air in the future—in what is said may well be a period of "high hopes and low finances." All the contributions made to this fund will be immediately used for the purchase of Defence or other War Bonds, which will be retained, and the use of the money deferred, until the rebuilding of Britain begins.

The Society, we know, is doing all that is practicable under present conditions. When the time comes for translating reconstruction plans into action, the responsibilities of the Society will be increased and its work will have to be intensified. Rebuilding and new building, housing, town, and country planning, fuel development, the transition from war to peace production, the re-equipment of industry—in all these problems will it be necessary for the smoke abatement aspects to be examined and expressed. The new fund is being launched, in spite of present difficulties, because there are grave doubts as to whether it will be possible for the Society fully to develop its post-war programme at the time it will be most effective. We have had occasion in the past to comment on the volume of good work carried out by the Society on very limited income. Let us have a look at the present position. The annual income has fallen as a result of the war from around £1,500 (and rising) to below £1,000. As a result of stringent economies expenditure has been considerably reduced, and there are reasonable hopes that there may be no undue difficulties while this reduced expenditure can be maintained. But as soon as the war is over full activity must be resumed and as a corollary expenses will at once rise—*i.e.*, if effective work is to be carried out. Obviously financial uncertainty would seriously hinder the progress of work that will have to be started at once. What the Society is aiming at is a flying start with adequate funds. This is an appeal to give for victory and for the tasks which lie beyond it, and we hope the appeal meets with an excellent response.

WAR DAMAGE

THERE has now been announced the Government Scheme for war damage compensation for public utility undertakings, and it seems to us opportune to review the existing War Damage Act as it affects particularly public utility concerns. Actually the Act represents to a certain extent a reversal of the policy laid down by the Government at the outbreak of war in 1939. At that time the Government declared that any scheme of insurance in respect of war damage, other than the insurance of commodities, was impracticable, as it was impossible to compute the amount of the loss which might be occasioned by hostile bombing. This policy was supported by a special committee over which Lord Weir presided. The principle adopted by the Government on the outbreak of war was that as a general rule damage occasioned by enemy action was to be regarded as a national and not as an individual charge, and that compensation would be paid from the Exchequer after the war in accordance with the financial status of the nation at that time. This policy was subject to the power conferred upon the Government by the Essential Buildings and Plant (Repair of War Damage) Act, 1939, which enabled the Treasury to make loans in respect of buildings and plant where the restoration of such buildings and plant was essential in the national interest.

The introduction of the War Damage Act, which to some extent applies the principles of insurance to war damage, was due in large measure to the insistence of the present Prime Minister, and there can be little doubt that the broad general principles laid down by the Act are approved by and acceptable to the nation as a whole. It was inevitable, however, that such a Measure should be complicated, and although the Parliamentary time afforded to the Measure was, having regard to the war situation, considerable, it is really surprising that so many controversial points could have been settled without greater delay.

The original Bill contained an explanatory statement which stated that it was the intention of the Government to deal by subsequent legislation with public utility undertakers after receiving the representations of those undertakers. It has, however, been necessary throughout all the stages of the progress of the Bill to the Statute Book to consider minutely the various provisions contained in the Bill which might affect public utility undertakers. This work has been carried out by the Conjoint Conference of Public Utility Associations, representing, as that organization does, the three great public utilities of gas, electricity, and water. The original suggestion of the Conjoint Conference was that public utility undertakers should be excluded *in toto* from the provisions of the Bill, but this suggestion for various reasons was not accepted by the Treasury. The position as it now stands is as follows:

Part I of the Act relates to the insurance of buildings and other immovable property. The insurance of such property will be covered by a premium of 2s. % on the annual value as ascertained for Schedule "A" purposes. Normally, public utility undertakers are not assessed under Schedule "A" and have no rateable value which is related to a structural valuation. It is therefore provided by the Act that until subsequent special legislation is introduced public utility undertakers should pay no contributions under Part I of the Act. This provision relates not only to the statutory public utility undertaker, but also to hereditaments which are assessed for rating purposes on the basis of profits and receipts. Under this heading non-statutory public utility undertakers are included. It follows, therefore, that neither statutory nor non-statutory undertakers are affected by Part I of the Act.

Part II of the Act authorizes the Board of Trade to make two Schemes: (*a*) the Business Scheme, and (*b*) the Private Chattels Scheme, which is not really relevant to this article.

With regard to the Business Scheme, this relates to the insurance of goods which are in a person's possession (whether he owns them or not) and are held or used by him wholly or mainly for the purpose of his business or which, if not in his possession, are owned by him in the course of that business. Generally speaking, the Scheme would apply to office furniture and loose tools and plant of the kind which would from the rating point of view be regarded as "tenant's chattels." It would also presumably include meters and appliances let out to consumers under simple hire agreements. The Business Scheme contains certain exemptions from compulsory insurance under the Scheme. Of these the two most important from the point of view of the Industry are as follows : Goods owned by statutory public utility undertakers; and goods which are subject to hire purchase agreements. With regard to the first, it seems an anomaly that while statutory undertakers are under no obligation to insure their goods under the Business Scheme, non-statutory undertakings will be compelled so to do. This will no doubt be a matter for subsequent negotiations with the Government, but pending the result of those negotiations it will be necessary for non-statutory undertakers to insure their goods.

Goods which are subject to hire purchase agreements are voluntarily insurable under the Business Scheme. In such cases it will be for the owner of those goods—*i.e.*, the undertaker —to insure the goods from time to time on the basis of their insurable interest. As the insurable interest will vary as the instalments are from time to time paid by the hirer some formula will be necessary for ascertaining what the insurable interest of the owner may be. Generally it is the wish of the Government that statutory undertakers should not insure under the Business Scheme, but should await the subsequent legislation which the Government are to introduce, and the Chancellor of the Exchequer has given an undertaking that such undertakers shall not be prejudiced by reason of the fact that they have not insured under the Business Scheme before the prescribed date.

The Act leaves in force the Commodity Insurance Scheme authorized by the War Risk Insurance Act, 1939, and goods which are insurable under the Commodity Scheme will not have to be insured under the Business Scheme. Generally speaking the goods which are insurable under the Commodity Scheme are goods held for the purpose of sale, such as cookers and appliances held in stock by gas undertakings for sale to their consumers. Formerly, such commodities as water, gas, electricity, coal, coke, gas oil, coal tar pitch, were not insurable under the Commodity Scheme, but they have now become so insurable on a voluntary basis. Once again, before there is definite information as to what the special public utility scheme is to cover, it is not likely that undertakers will exercise their option to insure, say, gas under the Commodity Scheme.

After this brief description of the general framework of the Act, it is desirable to mention the main outline of the Government Scheme with regard to public utility undertakers which has now been published.

This Scheme provides for a single form of insurance and a payment of one premium in respect thereof. Presumably the insurance will cover buildings and immovable property, together with such property as would normally fall under the Business Scheme of the Act. It is not known whether it would also cover commodities voluntarily insurable under the Commodities Scheme, such as gas, coal, &c. An estimate will be made of the total enemy damage suffered by any particular group of public utility undertakers, and this amount will be divided into two parts. One part will be defrayed by the Government, and the other part will be divided among the group of public utilities on some agreed basis approved by the Government. It will be left for the Industry to decide the basis upon which this allocation is to be made, and it is thought that the decision will be a matter of some complication and difficulty. Further, it is complicated by the anomalous position of non-statutory undertakers, who will be in the Scheme in respect of buildings and immovable property and, unless the Government alter their present decision, outside the scheme in respect of their business goods. It may be added that the Essential Buildings and Plant (Repair of War Damage) Act, 1939, is not repealed, but the War Damage Act makes provision for payments from the Treasury to public utilities in respect of urgent repairs rendered necessary by war damage, and the Special Scheme will no doubt contain provisions for other immediate payments to be made in the case of public utility undertakers since the due functioning of those undertakers is of paramount importance to the nation.

Personal

On May 29 the degree of Doctor of Science (Leeds), honoris causa was conferred on Professor J. W. COBB, who was Livesey Professor at Leeds University from 1912 to 1938.

* * *

Newton Chambers & Co., Ltd., have appointed as Managing Director, for the purpose of co-ordinating their extensive coal-mining, foundry, engineering, coal-distillation, and chemical operations, Mr. H. E. G. WEST, General Manager of the firm's Chemical Works, who joined the Company 22 years ago from the Contracts Department of the War Office, to which he was transferred after being seriously wounded in France in 1917. Mr. West has for many years been a prominent figure in the colliery and chemical industries and has served on many committees formed to promote research into coal chemistry and to develop the marketing of colliery products. The office of Managing Director of the firm has been in abeyance since the death in 1934 of Mr. W. Newton Drew, who combined it with that of Chairman of the Company. The present Chairman is Sir Samuel Roberts, Bt.

* * *

Mr. A. T. OWEN, who has retired from the position of Works Manager at the Birkenhead Corporation Gas-Works, having accepted a position in Shropshire, has been presented by his former colleagues with a silver tankard, a cigarette box and ash trays, and by the workmen with a gold wrist watch, suitably inscribed. Mr. Owen has been in the service of the Birkenhead Corporation since 1913.

Obituary

An Appreciation of P. C. Holmes Hunt

I have read in your columns with deep regret the passing of my old friend P. C. Holmes Hunt, of Melbourne, or, I might say, of Australia. Only those, perhaps, who had the opportunity of meeting him in the country of his adoption could fully realize the large share he took in the wonderful advancement of the Gas Industry in Australia of recent years by his engineering ability, wise counsels, and dynamic energy. The successful development of the Colonial Gas Association is an example of his sound administration. His unbounded hospitality, charm of manner, and quiet humour will live in the memories of his friends. As an instance, when my wife and I arrived at Sydney, he travelled from Melbourne on purpose to meet us on the quay when our ship docked.

It was my privilege to attend, at his invitation, the first meeting of

the Australian Gas Association, in Melbourne, which he presided over, and which was a spontaneous success.

The many important Works throughout the Continent for which he was responsible will be a lasting memorial for the Industry.

B. B. WALLER.

* * *

It is with regret that we have to record the death on May 31 of the wife of Mr. W. D. Rowe (Manager of the British Commercial Gas Association, who has been seconded to the Home Office for the duration of the war). Mrs. Rowe, who had been ill for some months and had recently undergone an operation, was well known to many of her husband's friends and colleagues. The sympathy of all will be with Mr. Rowe in his bereavement.

Severn Valley Gas Corporation

Results and Developments Satisfactory

The Seventh Ordinary General Meeting of the Severn Valley Gas Corporation, Ltd., was held on June 3 at the offices of the Gloucester Gas Light Company, Gloucester.

Major JULIAN DAY (the Chairman) presided.

The SECRETARY read the notice convening the meeting and the report of the auditors.

The CHAIRMAN'S Address, which had been previously circulated, was as follows:

My review of the year ended March 31 last is circulated to shareholders with the notice convening the seventh annual general meeting of the Corporation in order to minimize travel.

A recent Order of the Board of Trade forbids the publication of the accounts of gas companies and restricts the disclosure of information concerning their operation. These restrictions do not apply to this Corporation, but in conformity with the spirit of them I shall refer only to the financial results of the Corporation and not to the operation of any of the companies forming the group.

Balance-Sheet Items

The Corporation's balance-sheet shows few changes compared with that of the previous year. The increase in investments in subsidiary companies of £15,954 is represented by increased holdings in the shares of companies which were already members of the group a year ago.

The revenue account shows an increase of over £2,000 in the revenue derived from dividends and interest on investments (gross), and an increase in other income of just over £800.

Expenses show only a very small increase apart from the item "Income Tax," which at £32,120 is £8,639 in excess of the amount provided in the preceding accounts. For this reason the balance carried to appropriation account of £41,858 shows a decrease of £6,992.

Allocation of Profit

In the appropriation account the balance brought forward from the preceding year, after deducting the final dividends declared at the last meeting, was £16,074, which added to the balance brought from revenue account this year creates a balance of £57,932. The deduction of income-tax from dividends paid to shareholders at a higher rate than applied last year reduces the net sum required for this purpose, so that the disposable balance of £31,627 is substantially the same as in the preceding accounts.

Your Directors recommend a final dividend of 2¾% on the Ordinary shares, thus maintaining the year's dividend at 5½%, less tax, which is the same as has been paid for the past few years, and a dividend for the year of 6%, less tax, on the Deferred shares, also unchanged. In addition, the Directors have transferred to reserve fund the sum of £5,000. After giving effect to such transfer, the sum to be carried forward is £14,208, a decrease of some £1,800 from the year before. Under the conditions at present prevailing these results are a cause of considerable satisfaction, as are the developments in certain companies of the group to which I regret I am unable to refer.

Tribute to Directors and Staff

Mr. S. G. Wood has been appointed Deputy Chairman, and Mr. G. M. Gill Managing Director. Both of these Directors were active in the foundation of the Corporation and have from the very first exercised duties now formally recognized. The steady growth of the organization has been largely due to their efforts. Throughout the entire group the Corporation has been well and truly served by the staff and employees of the constituent companies, who have shown in these difficult times a splendid spirit of determination and have preserved a very high standard of service to consumers in the face of difficulties, however caused.

The report and accounts were adopted.

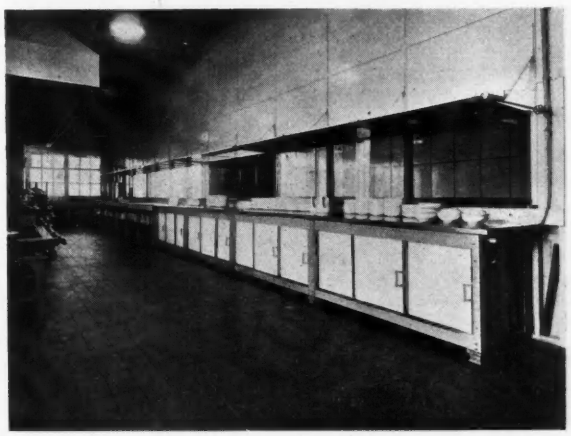
The London and Counties Coke Association will hold the following meetings at Gas Industry House on Monday, June 16: Finance Committee, 10.30 a.m.; Executive Committee, 11.0 a.m.; Central Committee, 2.30 p.m.

Officers and Men of the Czech Army stationed in a provincial town staged a demonstration recently, at the gas showrooms, of simple Czech cookery. They expressed the wish to show their appreciation of the hospitality extended to them locally and their demonstrations proved so popular that they are being repeated.

Canteen for War Workers

For a factory employing 1,200 people on work of national importance, Radiation Ltd. (Large Cooking Apparatus Section) were recently responsible for the complete equipment of a new canteen kitchen to cater for 400 meals per day, including subsidiary equipment and labour-saving machines, in addition to the cooking apparatus. The photograph shows a section of the installation, the apparatus installed including: Double oven no. 507 "Chester" range, No. 58 vegetable and pudding steamer, two 20-gallon "Lune" boilers, "Savoy" griller, 8-ft. "Belgravia Minor" hotcloset, tea-making boiler. All the cooking apparatus (excepting the grill) is grouped together into a central suite, over which is a hood for collecting and removing the cooking fumes.

Industrial Canteen for 500



The illustration shows the hot-service counter and tea-making plant at a newly equipped canteen recently completed by Messrs. James Stott & Co. [Engineers], Ltd. The canteen in question is an industrial concern and is capable of catering for 500 persons. The equipment provided consists of roasting ovens, cooking ranges, vegetable steamers, automatic pattern fish-frying ranges, boiling pans, potato-peeling machines, automatic dish washers, vegetable preparation sinks, hot service cupboards, boiling tables, tea making plants, and refrigerator. The canteen was designed throughout by Messrs. Stott and the equipment manufactured to suit the particular requirements. It is of first-class finish, being vitreous mottled enamelled with white panels and chromium-plated fittings, the surroundings painted cream to match. The whole of the pipework and ventilation was carried out under the supervision of the Company.

A Beautifully Situated new bowling green which has been constructed at Granton, and provided under the auspices of the Edinburgh Corporation Gas Department Welfare Club, was formally opened on May 31 by Lord Provost Sir Henry Steele. In congratulating the Department on the acquisition of this splendid green, the Lord Provost stated he hoped the men would benefit greatly by the green, which, he understood, was inspired by Mr. Jamieson, the Engineer and Manager of the Department. Dr. John Orr, Vice-President of the Scottish Bowling Association, maintained that a bowling green was a great asset to any community. Councillor G. D. Brown, Convener of the Gas Committee, expressed thanks to the Lord Provost and Dr. Orr for their presence there and presented the Lord Provost with a memento of the occasion. Afterwards a match took place between the Edinburgh Town Council and employees of the Gas-Works.

WALES ASSOCIATION MEET IN CARDIFF

THE COAL PROBLEM

THE war has brought many problems to the Gas Industry, and one of the most important of these is the question of coal, which affects all, from the largest to the smallest works." This remark was made by Mr. R. L. ASPINALL, the President, at the thirty-sixth Annual Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers, which was held on Thursday, May 29, at the Park Hotel, Cardiff.

In the ordinary course of things this meeting would have taken place at Barry, the home town of the President; but in the exceptional circumstances now prevailing, it was decided to hold the May meeting at Cardiff, and to devote the time mainly to a discussion of the topical question of Air Raid Damage to Gas Undertakings, which was introduced by Papers by Mr. W. H. Johns and Mr. F. Boardman, and led off by Mr. W. Clark Jackson. To this subject a lengthy private session in the afternoon was devoted, and it is fortunate that the attendance was good, seeing that the useful information elicited had to be confined to those who were present. The morning session was given over to more or less formal business, and between the two there was a pleasant luncheon party in the Hotel.

To those who had been privileged to be present, it probably came as a shock to learn that it was as far back as 1912 when the Association visited Barry, during the Presidency of Mr. T. E. Franklin, who was Mr. Aspinall's predecessor as Engineer there. Mr. Aspinall's hope that the Association may be able to visit Barry again in the not too distant future must be echoed by the members generally. Meanwhile it was pleasing to hear read a telegram from Mr. Franklin expressing regret at his unavoidable absence, and assuring those present that he was with them in spirit.

Another greatly regretted absentee was Mr. H. D. Madden, who is only now on the way to recovery from serious illness which has overtaken him since his retirement from his position with the Cardiff Gas Company. "I should like," said the President, "to pay tribute to Mr. Madden, the loss of whose presence and able guidance in all our deliberations will be difficult to replace. Of Mr. Madden's abilities, both as an engineer and as an organizer, there is no need to speak; the high positions he has held provide sufficient evidence. Mr. Madden has occupied this Chair no less than three times, which has been rare good fortune for the Association, for a more worthy and indefatigable President it would not be possible to find."

A letter received by him from Mr. Madden was read by the President, in the course of which the writer said: "My doctor has just permitted me to write a note or two in my convalescence and I am taking the opportunity to thank you and all members of the Association for all your kind thoughts and enquiries during my recent illness, and to say that I regret I shall be unable to be with you at the meeting, but my heart will be with you all."

Mr. J. H. Canning said the President had paid Mr. Madden a well-deserved tribute. No member had done as much for the Association as Mr. Madden, and one naturally wondered at a time like this what could be done to show appreciation. There was one thing which it did lie in their power to do, and he would like to propose that they make Mr. Madden an Honorary Member of the Association, and that a telegram to this effect be sent him. This was, perhaps, the highest honour they could do him.

Mr. W. H. Johns seconded the proposition, and it was heartily endorsed by the members.

On the subject of Association membership, the report of the Council which was submitted at the meeting stated that the roll now numbers 159, comprised of 91 members, 4 honorary members, 61 associates, and 3 students. This shows a decrease of three during the year. Losses by death included Mr. F. Hill, a Founder Member of the Association, Mr. H. Sutcliffe, of Gowerton, and Mr. L. Murray, of Blaina. Quite recently they had lost an associate member, Mr. F. Thomson. Then there was Mr. R. G. Shadbolt, who had been a regular visitor at their meetings, and had frequently contributed to the discussions. It was intimated that in all cases letters of condolence had been sent to the relatives, and members stood in silence as a mark of respect.

It was explained by the Hon. Secretary (Mr. E. M. Edwards, of Port Talbot) that, owing to the change in secretaryship and the subsequent death of Mr. Wilfred Jones, the accounts for the past two years had yet to be audited. When this had been done they would be circularized to the members.

It was proposed by the President, seconded by Mr. Canning, and agreed, that the Association should follow their usual procedure by making a grant of ten guineas to the Benevolent Fund of The Institution of Gas Engineers.

New Office-Bearers

On the recommendation of the Council, the following office-bearers were elected for the ensuing year:

President: J. F. Rust.
Senior Vice-President: A. E. Pask.
Junior Vice-President: D. Muir.
Council Members: H. G. Horwood and B. J. Bell.
Auditors: F. Boardman and S. Walker.
Treasurer: J. H. Canning.
Secretary: E. M. Edwards.

Several members spoke in appreciative terms of the new President, and Mr. Rust briefly thanked the members for the honour they had done him.

A Difficult Position

When the item on the agenda "President's Address" was reached, Mr. Aspinall said the abnormal conditions with which he had been faced had made it quite impossible for him to sit down and prepare anything in the nature of a formal address, and he had had to content himself with jotting down a few rough notes. Though his duties as President had been very light since his election to this position in September last, the demands made by his undertaking upon his time and energy had entirely made up for any lack of work which he might have done for the Association.

In the course of his reference to coal as one of the most important problems that the war has brought to the Gas Industry, Mr. Aspinall said: "The constant increases in price—unavoidable, no doubt—are serious enough, even if supplies and quality were regularly maintained; but when we are faced with the acceptance of inferior coals and very irregular, and often inadequate supplies, the position is made doubly difficult. Again, owing to the grossly inadequate coal carbonizing plant at Barry, we are forced to manufacture, as a regular practice, over 50% of carburetted water gas. Thus our position under present conditions is a very unfortunate one. Not only have we to use a huge proportion of oil at treble peacetime price, but we also have to consume the major part of our coke production, which, at prevailing prices, should be cancelling-out some of the increase in the cost of coal. When to all this is added the extra ash content in to-day's coke, and its effect on the economy of carburetted water gas production, you can imagine I feel as strongly on this question as most engineers. It will be a good day for us when we are able once again to purchase in the open markets, and secure the coals we find most suited to our needs."

Labour

After pointing to the need for the production of increased quantities of benzole, the President went on: "Another difficult problem we have to face is that of labour. This is likely to become acute in the near future, unless we are afforded adequate protection by the Government. A great deal of our work calls for trained and able-bodied workers, and their replacement by untrained and unfit men, willing though they may be, is not very satisfactory. I am aware of the difficult times, and that we must all of us do our utmost, and make every sacrifice, to secure victory; but we are an essential Industry to the life of the nation, and as such I trust, and believe, we shall be given fair consideration by those in authority. While on the question of labour I should like to pay my tribute to the loyalty of the workers in the Gas Industry, who certainly deserve all the consideration the Industry can afford. We are all working and making sacrifices for the same cause, and it is to be hoped that our common experience will lead to greater rewards, and closer human fellowship, in the future."

Mutual Aid

At the meeting of the Association held last October, a discussion took place upon wartime problems affecting the Gas Industry, and in the course of it the Hon. Secretary gave details of what was being done in the direction of forming district groups for mutual assistance in A.R.P. matters. Mr. Aspinall touched upon this subject in the course of his remarks, expressing

the opinion that they should further consider the question of mutual aid, in order to determine whether they could not develop a "flying squad" made up of a number of trained men from each undertaking, together with the necessary tools, mechanical appliances, and transport, so that effective, and much more substantial, aid could be given at the earliest possible moment, wherever it might be needed. As he viewed it, this question of self-help was one of urgency. For the welfare of the Industry it was essential that interrupted supplies of gas should be restored as rapidly as possible. In conclusion he voiced the pleasure of all at the large number of well-merited awards for gallantry—under extremely dangerous conditions—that are being made to members of the Gas Industry.

Mr. J. F. Rust, of Newport, the newly-elected President, thanked Mr. Aspinall for having put forward his views in the manner in which he had done. Having regard to the circumstances prevailing at the present time, there was certainly no need for him to apologize for not having been able to prepare a formal Address for the occasion.

The Hon. Secretary was also thanked for the excellent work he had done for the Association.

New Members

The following additions were made to the membership roll of the Association: H. F. Witcombe, Rhondda; C. L. Singleton, Chepstow; A. H. Dyer, Newport; A. E. Mathews, Maesteg.

Mr. R. J. Auckland was appointed, in place of Mr. Madden, as a representative on the National Gas Coke Association, and Mr. W. T. Kenshole was elected as a second representative.

Cardiff Gas Company

Proposing the toast of "The Cardiff Gas Light and Coke Company" at the luncheon, Mr. Johns made acknowledgment of the ungrudging way in which assistance was always accorded by the Company to all who sought it. It was a real pleasure to them, both individually and as an Association, to visit Cardiff and see the good work that was being done for the Industry there. As they had looked to Mr. Madden in the past for help, so they would look to Mr. Auckland and Mr. Boardman in the future.

In the course of his reply Mr. Auckland said how much they deplored the absence of their old friend Mr. Madden. Looking back upon his own long period of service with the Cardiff Gas Company, it was a great pleasure to recognize its growth, and he hoped, as he believed, that it would have a future commensurate with its past. So far as he himself was concerned, any service that he could render would be at their disposal in the future as it had been in the past. He was sure that he could say the same for Mr. Boardman, as chief technical officer, and also for Mr. Bell, and the whole of the staff. "Our interests are your interests," concluded Mr. Auckland.

Mr. Boardman remarked that Mr. Madden had lived for the Cardiff Gas Company and for the Wales and Monmouthshire Association. It would be difficult indeed to follow in his footsteps, but he would do anything for them that he could.

The remaining toast—that of "The Association"—was submitted by Major Reginald Bird, who said that he owed a great deal to the Association for very many friendships and happy recollections. He had to couple with the toast the name of Mr. Aspinall, who followed in a long line of distinguished Presidents. They all wished every success to the Association, and prosperity to the Secretary, upon whom this success so largely depended.

The privilege of supporting this toast afforded Mr. Alfred Harrison an opportunity of expressing his gratification at the fact that, though he had regularly attended the meetings over so long a period, he had evidently not outlived his welcome among the members. It had been a pleasure to him for more than thirty years to watch that growth in strength and usefulness of the Association which they all hoped might continue.

The President, in his own genial style, acknowledged the cordial manner in which the toast had been honoured, and said he was particularly pleased that the Secretary had been referred to in connexion with it.

Mr. Edwards declared that he enjoyed his work as Secretary, for his heart was in the Association and in the Industry.

THE FACTORIES ACT, 1937

AN Address on the Factories Act, 1937, and its relation to the Gas Industry was given recently to the Scottish Junior Gas Association (Western District) by Mr. F. M. HUNT, Superintending Inspector of Factories. Mr. Hunt explained that the Act is what is called a consolidating Act. New processes, he continued, new materials, new types of machinery, are always coming into use. These may introduce new risks to health or other dangers not covered by legislation then in force, and in certain cases it becomes necessary to pass what are called supplementary Acts. Both gas-works and gasholders with a capacity of 5,000 cu.ft. and over are factories within the meaning of the Act.

More air space is required by the new Act. Workrooms now require 400 cu.ft. of air space per person employed as against the old 250, but there are saving clauses in respect of old workrooms. In my experience, he said, there is usually far more than the legal requirement in gas-works. As regards temperature the old requirement that provision for securing and maintaining reasonable temperatures in workrooms by means not interfering with the purity of the air is retained, but where sedentary work is carried on that reasonable temperature is defined as 60°F. to be attained after the first hour of work. I cannot recall much sedentary work, however, in a gas-works. Adequate ventilation circulating fresh air in the workroom is asked for, and the means of ventilation is to render harmless as far as possible any fumes, dust, or other impurities which might injure the health of the workers.

Having dealt with the lighting requirements, Mr. Hunt went on to say that in certain work, such as dry grinding of metals on abrasive wheels, welding processes, and other classes of job, protection for the eyes either by goggles or screens is necessary.

The law as regards steam boilers has been strengthened in many respects. Regarding the fittings which have to be provided it should be noted that the combined safety valve and stop valve is now prohibited; means for attaching a test pressure gauge are required, and the fusible plug or low water alarm is a legal necessity in case of internally fired boilers. The weights of the lever type safety valve have to be pinned in the correct position. The usual examination of the boiler is required every 14 months, the full examination required being in two parts—internal and external under steam. New steam boilers cannot be used unless certified by the maker or a boiler-inspecting company, and second-hand boilers have to be examined and reported upon before use. If the boiler report specifies conditions for working the boiler then it is an offence not to observe those conditions. It behoves occupiers to read boiler reports very carefully. I have already come across a case where the boiler report said that there was no safe working pressure until certain repairs had been done. The firm's engineer had not noticed this and proceeded to re-start the boiler, with the result that there was a breach of this section. Such contraventions will now come quickly to our notice, because boiler inspectors are for the first time required to send us copies of reports where repairs are required to ensure the safety of the boiler and we shall naturally make prompt inquiries into such cases. Economizers and superheaters are now included in the definition of "boiler."

In addition to steam boilers two other types of steam vessels are dealt with. These are steam receivers and steam containers. The former are vessels used for containing steam under pressure, but steam boilers, steam pipes, and coils are excluded. The steam container is a vessel through which steam is passed for heating, boiling, drying, evaporating or the like purpose and which has a permanent outlet to the atmosphere.

Steam receivers have to be examined every 26 months and, unless they will withstand with safety the maximum permissible working pressure of the boiler or the maximum pressure which can reach them, they have to be fitted with reducing and safety valves, pressure gauge, and stop valve. These fittings may be on the single pipe supplying a set of receivers. The only requirement as regards steam containers is that the outlet is to be maintained free from obstruction.

Another new requirement relates to air receivers which are vessels—not pipes or coils—connected to a compressing plant to contain compressed air. They include also the vessels used to start Diesel engines and any vessel used for spraying paint, varnish, or similar materials but not parts of the actual spray pistol. Such vessels have to be marked with the safe working pressure, have to be fitted with reducing valve if not strong enough to withstand the maximum pressure, safety valve, pressure gauge, means for draining the vessel and to be provided with a manhole, or other means for cleaning the interior. If

there are several receivers on the one pipe these fittings may be on that pipe. Air receivers have in general to be cleaned and examined, and a report obtained, every 26 months. In the case of solid drawn receivers, the interval between examinations may be increased to 4 years, and instead of internal examination a hydraulic test may be applied. There are, however, types of steam vessels and receivers which may not be able to comply with all these requirements, and the Chief Inspector has powers of exemption either qualified or unqualified which he has exercised in certain cases.

I want to call particular attention to Sections 27 and 28 which are important in gas-works. The first section deals with doing work in a confined space, such as a chamber, tank, and the like. First of all it specifies that unless there be other means of egress, there shall be a manhole 18 in. by 16 in., or 18 in. diameter if circular. Tank wagon manholes are to be 16 in. by 14 in., or, if circular, 16 in. diameter.

The second part of this section prohibits any person from entering any confined space in which dangerous fumes are liable to be present in such amount as to cause risk, unless such person wears a suitable breathing apparatus, or unless all practicable steps have been taken to remove fumes and prevent their ingress; even if such practicable steps have been taken either a suitable test must be made to see that the space is free from dangerous fume or the person entering must wear a belt with a rope, the free end of which is held by a person outside. In any case suitable breathing and reviving apparatus and belts and ropes have to be readily accessible and these must be periodically inspected, so that they are ready in emergency. A sufficient number of persons are required to be trained in the use of the apparatus and in the method of restoring respiration. Boiler furnaces and flues have to be sufficiently cooled before they are entered.

Section 28 deals with precautions against explosion. The first two parts deal with dust. Plant giving off explosive dust must be enclosed as far as possible, accumulations of dust must be removed or prevented and possible sources of ignition—such for instance as electric lamps—must be effectively enclosed or excluded from the plant. Unless the plant itself can withstand an explosion, means for minimizing its results by means of baffles, vents, and the like appliances have to be provided.

The third part of the Section deals with plant containing an explosive or inflammable gas or vapour under pressure greater than atmospheric pressure. Before opening any joint of a pipe or slackening-off a cover of a plant containing such gas or vapour the flow must be stopped by valve or otherwise, and before removing any joint or cover the pressure must be reduced to that of the atmosphere. The gas or vapour must not be allowed to re-enter the plant until joints and covers are securely replaced. This third part however does not apply if the plant is in the open air.

The fourth part prohibits welding, brazing, or heat application at plant, tanks, or vessels which contain or have contained explosive or inflammable substances until such substances or fumes have been effectively removed or rendered innocuous. Nor can such substances be re-introduced until the parts have sufficiently cooled. The Chief Inspector has, however, exempted under certain conditions watersealed gasholders when being electrically welded by experienced operatives, and also cutting and welding operations on steel or wrought-iron gas mains from the requirements of this subsection. The conditions of exemption are set forth in forms 663, 664, 671, and 672, which can be obtained from the usual stationers.

There is a section (No. 33) of special interest to you. It concerns watersealed gasholders. These have to be of sound construction, properly maintained, and thoroughly examined by a competent person every two years. A record containing the preseribed particulars must be entered in the factory register. The prescribed particulars are given in S.R.O. 1938, No. 598. If any lift of a gasholder has been in use more than twenty years the internal state of the sheeting had to be examined before July 1, 1940, and then once every ten years. The examination must be made by cutting samples from crown and sides or by other sufficient means, such samples and the report thereon being kept available for inspection. A record of the date of construction of the oldest lift of a holder has to be kept and, if there be more than one holder, each must have its distinguishing number or letter. Repair or demolition of a holder can only be done under the supervision of a competent person. Only holders with less than 5,000 cu.ft. capacity are exempt from the requirements of this section.

I should now like to refer to a Code of Regulations which, although made in pursuance of the 1901 Act, still continues in force—namely, the Chemical Works Regulations. Gas-works are specifically exempted from these regulations in so far as gas manufacture is concerned, but where subsidiary processes are carried on such as ammonium sulphate manufacture or tar distillation they do apply to these particular plants.

As regards ammonium sulphate the relevant regulations are 2, 5, 6, 7, 8, 9, 10, 11, 13, 14, 16, 17. No. 2 requires exhaust if lime be slaked indoors causing dust or steam in the room; No. 5 deals with safety valves on closed vessels where pressure might arise. Sometimes the ordinary saturator seal, or possibly, the waste lime pipe hydraulic seal may fulfil the necessary function.

Nos. 6, 7, 8 deal with the provision of breathing and reviving apparatus and lifebelts, testing of closed places before entry and actual entry into places where dangerous gas may be liable to escape. As regards testing, no doubt most of you know of the leaflets now published by the Department of Scientific and Industrial Research dealing with methods of detection of toxic gases in industry. These can be procured from H.M. Stationery Office at a cost varying from 3d. in the cases of chlorine, benzene, nitrous fumes, to 5s. 6d. in the case of cyanide vapour. No. 9 requires non-metallic buckets, shovels and scrapers so that arseniuretted hydrogen shall not be evolved by contact with acid, while No. 10 deals with means for drenching persons, provision of eye-solution, goggles, and gloves where strong acids or corrosive liquids are handled. Nos. 11, 13, 14 deal with first aid provision; 16 deals with drinking water, and 17 puts duties on persons employed.

At tar distilling plants the important regulations are Nos. 4, 5, 6, 7, 8, 11, 13, 14, 19, 27, 28, 29. Of these I have already mentioned 5, 6, 7, 8, 11, 13, 14. No. 4 deals with lighting and precautions to prevent explosion by exclusion of sources of ignition. No. 19 deals with isolation of tar stills of the ordinary pot type before entry, while Nos. 27, 28, 29 deal with mealrooms and washing and bath accommodation.

In conclusion may I attempt answering a question which is asked very many times: "What factory forms do I need in my works?" Of course, in particular works there may be a need for special forms, but broadly speaking the following are the usual working ones: Abstract of the Act, Form 1, Notice of Hours and Holidays, Form 11, Placards of any Regulations applying in the works—in gas-works the common ones are Electricity, Chemical Works, and Locomotives. Overtime notice, Form 21, General Register, Form 31 to which various documents, such as boiler reports, gasholder reports, and hoist reports should be attached, a register for chains and lifting tackle, an accident book, Form 85. If the Chemical Works Regulations apply a book for records of examination of rescue apparatus and also a book to record tests before persons enter possibly dangerous places. An overtime book, if you have to report overtime of women or young persons to the Inspector, and finally, although I hope you will not need them, it is useful to have a few accident report forms, Form 43, on hand. Accidents are, of course, reportable to the Inspector if the injured person is prevented from earning full wages at his ordinary work for three days. If you are so unfortunate as to find a case of epitheliomatous ulceration arising from tar, pitch, or like substances or if a case of chronic benzene poisoning should arise a report has to be sent not only to the Inspector but to the Examining Surgeon as well.

Blackburn Corporation Gas Committee has agreed to the Department's cricket ground at Greenbank Gas-Works being used, free of charge, by service-men during the summer months.

Messrs. E. E. Jeavons & Co., Ltd., of Tipton, known throughout the country for main-laying and constructional engineering work, and as makers of governors, couplings, &c., inform us that the manufacturing side of their business is now under the style of Jeavons Engineering Company. Many gas undertakings to whom their smaller products as well as their constructional work is well known will be interested to learn of this new arrangement and title.

The Primitiva Gas Company of Buenos Aires, whose contract expired at the beginning of 1940, were authorized by the Municipality of the City to continue the supply of gas until July of this year, under the terms of the contract. The Argentine Federal Government, however, issueda decree in March last authorizing the National Oil Wells Department of the Argentine Ministry of Agriculture to make arrangements with the Buenos Aires Municipality for the operation of the gas service in the manner they consider most suitable, and, in due course, to submit for the approval of the National Executive Power the draft contract and the corresponding finance plan. In announcing this, the Directors of Primitiva Holdings, Ltd., present their accounts for the year ended April 30. These show that, after the payment of a dividend of 4% on the ordinary stock, and allocating £5,000 to General Reserve, there will remain to carry forward a balance of £122,520, which is practically the same as the sum brought in. The situation with regard to the suggested taking-over of the gas supply to Buenos Aires is receiving the constant attention of the Board, who have expressed their readiness to nominate representatives to a proposed Committee to discuss the terms under which the National Oil Wells Department would acquire all the Company's gas installations.

MODERN PRACTICES IN PIPE COATING*

By

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A VERY large percentage of the assets of gas companies consists of buried pipe. Naturally, to preserve these pipes is a matter of considerable importance. Corrosion is the most active of the influences attacking these pipes, and this discussion will be devoted to the study of the methods of combating this destruction.

The soils of the South and South-west have a bad reputation as to corrosive properties. In fact every soil should be suspected as bad until proved otherwise. In combating corrosion three methods, or a combination of three methods is commonly used. One such method consists of the selection of materials. Another is by the use of protective coatings, and the third is by the use of electrical protection. Each of these methods will be discussed here.

Considerable success has been had in some instances in combating corrosion by the use of metals other than iron and steel. Some gas and water companies have been able to use copper service pipes with better results than had been possible with bare steel pipes. Telephone and power companies are using lead-covered cable sheaths with satisfactory results. However, when pressure and large volumes are necessary there are no substitutes for iron and steel. Thus we find that where pressures and volumes are necessary, we must use ferrous metals, and if corrosion is anticipated we must use some form of pipe protection. In this connexion it is the opinion of the writer that the most expensive and the most inefficient method of combating corrosion is by the use of extra wall thickness. Iron is the poorest pipe coating and about the most expensive.

Pipe-Coating Specifications

In the early stages of the pipeline industry little was known of the different types of pipe coating. As a result almost every conceivable material was used. The principal specification seemed to be that it should be black. We have been able to profit by the experiences gained from these early coatings. We at least know that there are some coatings that will not protect a pipe over any worth while period.

For a coating material to be of any protective value it must have the following qualities:

1. It must adhere to the pipe under all normal conditions. The reason for this is obvious.
2. It must resist soil stress. If necessary, this may be done by combining with a wrapper.
3. It must not absorb water.
4. It must be of high electrical resistance.
5. It must retain these qualities over a long period of time.
6. It must be practical to apply.
7. The cost must be within reason.

If we look at this as applied to an existing pipeline we will see that by measuring the electrical resistance (No. 4) we will have an index by which to measure 1, 2, 3, and 5. If the coating has lost contact with the pipe there will be a void which would be filled with water or at least moisture. This would decrease the resistance of the line coating. If there has been soil stress to the extent that it has caused the coating to lose its effectiveness there will be bare spots on the pipe. This will in turn lower the electrical resistance. If the coating has absorbed water it naturally has become lower in resistance. If the coating will not resist these influences over a considerable period it will be reflected in these resistant measurements, and if the coating has failed in these it also has failed to protect the pipe completely.

The question arises now as to which of the several types of coating that are now on the market will come the nearest to meeting these specifications. Many of you have had sufficient experiences with the several types to answer this question intelligently. I am sure that those men together with the less experienced ones will be interested in the information given in the last and final report of the A.P.I. pipe-coating tests.

These tests were begun 10 years ago under the direction of the A.P.I. co-operating with the Bureau of Standards and the pipeline industry. Four previous examinations have been made of these buried samples.

These test specimens were installed as follows: An existing pipeline was selected in each of the several locations in the United States. The pipe was exposed and cleaned, after which many different types and kinds of coating were applied. Several applications were made of each coating at most of the sites. At the same locations and close to the pipeline were buried 3-in. nipples about 2 ft. long. These nipples were treated in the same manner as the pipe line. Also at each test bare pipe and bare nipples were buried. This was for the purpose of determining the corrosive qualities of the respective soils.

The writer cannot agree wholeheartedly that these tests are conclusive as to the merits of the several types of coating. However, there is much valuable information to be had. At the time these tests were started the use of the electrical fault detector was unknown and consequently many "holidays" or holes in the coating were buried. These were later reflected as coating failures, while actually they were not.

The conductance tests reflect the effectiveness of the several coatings. By studying this data we are able to arrive at the following general conclusions:

1. So-called "cold paints" have but little value. This was shown on the first tests as well as the last one.
2. On the pipeline tests there were many failures on the non-shielded enamels—both coal tar and asphalt. On the 3-in. nipple tests many of the asphalts failed or the resistance was lowered very considerably. The coal-tar enamels on the nipple tests showed fewer failures and in nearly every case a high electrical resistance was maintained.
3. One asphalt coating of about $\frac{1}{4}$ in. thickness showed almost perfect results.
4. The shielded coatings as a whole gave far better results than the unshielded.
5. In general, the effectiveness of the coating was in direct proportion to the thickness. This is especially true with the asphalt-base enamels.
6. Failures of the coating in many instances to protect the pipe can be explained in only one way—it must have been poorly applied.
7. These tests prove that the time the coatings were applied a better method of application was needed when pipes were coated in the field.

As previously stated these test specimens were buried 10 years ago. The art of protecting pipes has advanced considerably since that time. It may be interesting to bring these tests up to date as far as possible—that is, to use the information gained by these tests and apply it to present operations. In doing this we make the following observations:

Coating Materials.

We are still using the same basic materials—coal tar, asphalt, and grease. However there have been improvements in all these. Coal-tar enamels have been developed that are more workable in extreme temperatures, both hot and cold. All the present-day asphalt enamels have been developed since these tests were originated. It probably is not fair to compare these present coatings with the similar ones used in these tests. The grease coatings may now be applied hot, thus making possible a much thicker and stronger cover.

For the most part shielding is now done with an impregnated asbestos wrapper. In a few cases a cement shield is used, but most of the other reinforcements such as metallic shields have been abandoned.

The old hit-and-miss sling method of applying coating has now become almost a thing of the past except for short sections or repair jobs. No satisfactory protection can be secured with faulty application no matter how good the material.

Almost everyone now insists that the pipe, both new and old, be thoroughly cleaned, either with a machine or by sand blasting. The primer coat is generally machine applied under close regulation and observation.

The hot coat is now applied by the line-travelling machines, of which there are two or three makes available. While these machines are not perfect their advantages outweigh their shortcomings. Very few skips or "holidays" are left in the coating, and very rapid progress is possible. On one line this past summer the writer found that practically all the faults that were

* Part of Paper presented before a meeting of the Southern Gas Association, Dallas, Texas.

found were found at the points where the pipe had been lying on the skids.

It has been possible for a considerable time to have coatings applied at the stationary plants. This is, and has always been, a satisfactory method of coating pipes. Equipment is now available that may be set up at rail heads or other convenient sites. This method of applying coatings has some advantages over other methods. It minimizes the work to be done on the right-of-way. This may be important where right-of-way conditions and weather are bad. Pipe of almost any size may be coated in this manner. The writer used this method recently to coat pipe as large as 54 in. in diameter. One large job of 16 ft. diameter pipe was coated in this manner during the past summer. Thus we find that machines are now available for coating pipe in almost any circumstances.

Testing for Coating Applications

Most operators are no longer satisfied with anything except a perfect application, or as nearly perfect as humanly possible. The coating inspector—and no line of any size should be built without one—should be a thoroughly experienced man. All the following operations incidental to the application should be passed by him.

1. Cleaning.—This is the first step in securing a good application. A thorough job must be insisted upon.

2. Priming.—The primer should be applied as soon after cleaning as possible. This is to eliminate rust forming during this interval. The use of "thinner" in the primer should be discouraged. The only excuse for its use is to thin it for better spreading during cold weather. The same result can be obtained with a little more "elbow grease." The pipe should be thoroughly but not over primed.

3. Coating.—One of the most important things to watch is the kettle temperature. However, there is one factor that is overlooked. The temperature of the coating as it comes in contact with the pipe is vital and should be controlled.

4. "Holiday" detectors.—No coating will give complete protection unless it completely covers the pipe. It is impossible to detect faults or skips in the coating with the eye after the wrapper has been applied. The electrical detector can be so adjusted that it will spark through the wrapper if there is no coating underneath. It can also be adjusted to detect less than minimum thickness of the coating.

We mentioned earlier that when the A.P.I. tests referred to were started, that present practices were unknown. These developments have come about so gradually that it may be that we have lost sight of some of the real advantages gained.

We mentioned that some of the coating failures could be only accounted for by faulty application. This is probably the case. At two locations, for instance, one specimen showed a conductance of zero and at another location it was 640 micro-mhom. The fact that this particular material absorbed no moisture and remained a perfect protection at two locations for 10 years would indicate that some skips, perhaps very small, had been left in the coating on the latter test. There are other similar examples.

The question naturally arises as to how much value we can gain from these tests. From them we note that there are coatings that will retain their effectiveness for at least 10 years, and probably many times this. So if a good application is secured, using present-day methods, it should be possible to easily maintain a line for as long as there is a necessity for it to exist. To do this best it probably would be necessary to use cathodic protection.

Cathodic Protection

If we refer to the A.P.I. tests again we see that with the shielded coal-tar enamels we gave conductance of zero to 620 mhom. The average of 30 tests was 63.34 micro-mhom. At the end of one year these same tests showed a conductance of approximately half this. This indicates that at least half the loss of effectiveness was lost during the first year. It is altogether reasonable to presume, therefore, that these failures were due to faulty application.

The writer was engaged recently on a line upon which a coating similar to the one above mentioned was used. Every effort was made to secure a perfect application. After the line had been buried for some time during which time several hard rains had fallen in the area, electricity was applied to protect any place on the pipe where the coating was not properly applied.

This was an 18-in. line approximately 42 miles long. The total amount of current necessary to protect the line completely was a little less than 12 amperes. Now if we reduce this to a square foot basis we find that the conductance is less than one-tenth of that found upon specimens which were used 10 years ago. In other words, it is easily possible to coat a pipeline more completely now in the field than it was to coat a short specimen in the laboratory 10 years ago.

Keeping the above figure in mind, it is readily seen that the problem of the additional protection a well coated line would require is a small one indeed.

Conclusions

It is the writer's belief that the conclusions to be drawn from this study may be summed up in a few words:

1. Coatings may now be selected with assurance that they will not lose their effectiveness over any reasonable period of years.

2. Coatings may now be efficiently and economically applied by machine, either in yards or upon the right-of-way.

3. Tests are possible that will tend to eliminate the possibility of burying uncoated pipe.

4. It is a matter of practically no consequence to protect electrically a few faults in the coating which may be buried.

USE OF BREEZE IN INDEPENDENT PRODUCERS

[Contributed]

IT is well known that breeze can be and is used for the firing of independent gas producers, and numerous publications have dealt with the use of a greater or less proportion of breeze mixed with the coke nuts employed as the main fuel. In English practice it is usual to class as breeze for this purpose any coke below ½ in., while in Germany, where independent producers are much commoner in gas-works than here, breeze is coke below about ⅜ in. Some of the recent references to the use of breeze in producers describe the employment of a dust-free fuel from which all material below ⅛ in. has been removed so that what is used is in fact a small graded coke with the not excessive ratio between the upper and lower size limits of 4 : 1.

In Sweden, which is the source of a recent publication on this subject,* there is a valuable market for small coke graded between about ¼ and ½ in., so that the only breeze left for use on the works is that from ¼ in. down to dust. This unpromising material is used with great success in the independent producers of the Stockholm City Gas-Works.

The Värta gas-works of the Stockholm Gas Department has an annual make of about 5,000 million cu.ft. The chamber oven plant is fired with gas from fourteen independent producers, of which the constructional details are given in Table I.

* *Monatsbull. schweiz. Ver. Gas- u. Wasserfachm.*, **19** (1939), pp. 157–162.

TABLE I.

No.	Type.	Internal diameter (ft.).	Grate.	Ash removal.	Throughput, t/24 hrs.	Designed for coke of size—	Remarks.
1, 3	Pintsch, high-pressure	8.5	Conical	Automatic	17–20	¼–⅜	In reserve.
2, 4	Pintsch, low-pressure	Do.	Conical	Automatic	18–22	⅜–1	In reserve.
5	Koller	,,	Conical	Automatic	17	Do.*	Operating.
6–10	Koppers	,,	Conical	Automatic	30	1–1½	Operating.
11–14	AVG	,,	Conical	Automatic	13–16	¼–⅜†	Operating.

* With 33% of coke under ¼ in.
† With 30% of coke under ¼ in.

In the acceptance tests of the producers which were guaranteed to gasify breeze—all installed since 1930—the severest conditions were imposed by using breeze strictly below ¼ in. mixed with graded coke. Table II shows the operating results, which were good enough to justify the continued use of breeze on a large scale. It will be seen that Nos. 5 and 13 producers exceeded their guaranteed throughput with over 30% of breeze in the coke used, while Nos. 11 and 14, though fed with coke containing over 40% of breeze, actually achieved a throughput within the guaranteed limits. The calorific value of the gas was reasonably high and the carbon-in-ash losses were surprisingly low in the circumstances.

TABLE II.

		No. 5.	Nos. 11 and 14.	No. 13.
Size of base coke	in.	$\frac{3}{8}$–1	$\frac{1}{4}$–$\frac{1}{2}$	$\frac{3}{8}$–1
Moisture in base coke	%	11	9	9
Ash in dry base coke	%	10	16	12
Proportion of breeze used (below $\frac{1}{4}$ in.)	%	33.4	42.8	32.4
Proportion below $\frac{1}{4}$ in. in breeze	%	52	63	63
Moisture in breeze	%	8	12	11
Ash in breeze	%	14	13	13
Throughput	tons/24 hrs.	17.8	13.1	16.8
Calorific value of gas	B.Th.U./cu.ft.	125	115	120
Efficiency of gasification	%	73.2	69.8	70.4
Carbon in ash loss	%	7.9	12.4	12.4

Since 1930, the Stockholm Gas Department have sold all their own coke of the 1–1½ in. size in the local market. To provide producer fuel they have bought foreign coke, the delivered cost of which was more than covered by the high prices realized for the small grades of their own coke. In the five years 1934–38, 131,000 tons of coke from various European sources—as far afield as England and Poland—were bought. On the average, 10% of the imported coke was sized between 1–1½ in., 30% between $\frac{3}{8}$–1 in., 25% between $\frac{1}{4}$–$\frac{1}{2}$ in., and 30% below $\frac{1}{4}$ in., the remaining 5% being over 1½ in. Sometimes the breeze content (below $\frac{1}{4}$ in.) was such that the coke had to be used direct in the producers without the addition of any Stockholm breeze ; and it was sometimes so high that all the material below ½ in. was removed and replaced by a smaller quantity of Stockholm breeze. This procedure had the further advantage that occasionally-occurring lumps of coal which were found in the foreign breeze could be removed with consequent reduction in troubles from tar in the producer gas.

In 1938 the works made 16,145 tons of breeze under $\frac{1}{4}$ in. During that year 25,529 tons of coke were bought from England, Poland, Czechoslovakia, and other works in Sweden; the size-distribution of representative samples of all these purchases appear in Table III.

TABLE III.—Size Distribution %.

	Over 1½.	1–1½.	⅜–1.	¼–⅜.	Under ¼.	Mean size.*
English breeze (regraded)	3.1	13.0	43.4	25.5	15.0	0.68
Polish (Robur-Halden)	0.6	20.6	50.9	15.9	12.0	0.76
Czech (Ostrava)	0.0	1.8	32.0	46.2	20.0	0.50
Swedish	0.0	0.8	17.1	57.1	25.0	0.43
Own coke, ¼–½	0.0	0.6	14.3	75.1	10.0	0.46
Do. ⅜–1	0.2	2.5	73.5	18.8	5.0	0.70

* The Stockholm figures are quoted in millimetres, of which there are 25.4 to the inch. More exact size analysis is therefore possible, with the appearance of exactitude, for the Swedes than for us, who have constantly to change the denominators of the fractions used or resort to decimal fractions of an inch as is done above.

Obviously, for the purpose in hand, the greater the proportion of coke between ¼ in. and 1 in., and particularly between ⅜ in. and 1 in., the better. To this base coke was added varying quantities of the local breeze, a typical size analysis of which was as follows†:

In.	%
Over ⅜	0.3
⅜–¼	3.1
¼–⅛	21.3
¼–½	About 23
Below ¼	„ 52

The amount of breeze that can be added naturally depends on the mean size of the base coke, its content of material under ¼ in., and the producer in use. For the same producer, the breeze addition is as shown in Table IV.

† See previous footnote.

TABLE IV.

Coke.	Mean size, in.	Content of coke below ¼ in., %.	Breeze added, %.	Total content of material under ¼ in., %
Own coke, small size	0.70	5.0	25	28.8
Polish	0.76	12.0	17	27.0
Czech	0.50	20.0	15	31.0
English	0.68	15.0	12	24.7
Own coke, very small size	0.46	10.0	10	19.0
Swedish	0.43	25.0	7	25.7

These figures represent the maximum possible additions of breeze, with which the operation of the producers was adversely affected. In order to maintain a daily throughput approaching 15 tons of mixed coke in each producer, it was found necessary slightly to reduce the proportion of breeze in the coke gasified, and the monthly average percentage of material under ¼ in. in the coke gasified during 1938 appears below together with the average daily throughput of each producer in operation:

	% of breeze.	Number of producers working.	Average throughput per producer per day.
January	23.1	6–7	13.0
February	28.0	7–8	12.0
March	25.2	7–8	12.5
April	22.3	7–8	14.0
May	23.0	8	13.5
June	21.9	4–8	11.5
July	19.6	4	13.0
August	18.7	4–7	13.5
September	17.7	7	15.5
October	22.7	7–8	15.5
November	21.9	8	15.5
December	17.8	8	16.5
Mean	21.8		13.8

The average loss of combustible in ash throughout the year was 13.3% and the average ash content of the dry coke mixed feed 11.9%. The loss of coke in the ash and clinker was thus 1.6%. On an arbitrarily chosen day the calorific value of the gas was 130 B.Th.U./cu.ft., and it had the following composition:

	%
CO_2	6.8
O_2	0.4
CO	26.3
CH_4	0.3
H_2	12.6
N_2	53.6

The publication of these results evoked a communication* from the manager of the gas-works at Winterthur (Switzerland). It was found in this works that an independent producer of 7 ft. diameter could be run successfully on coke containing up to 40% of breeze of size ⅜ in. to dust. However, in an attempt to dispose of even more of the material below ⅜ in. on the works, the practice was introduced of removing from this breeze the actual dust below 1 mm. ($\frac{1}{25}$ in.), fractionating the grade left and feeding it to the producer in layers. In this way, the addition of up to 60% of breeze to the base coke was possible. It was further found that the efficiency of gasification of the producer, which had previously been about 70–75%, was raised by this means to 75–80%, doubtless due to the more even fuel bed obtained by sandwich feeding and the elimination of pockets of dust. The CO_2 content of the gas obtained at the periphery of the producer was considerably reduced, with consequent benefit to the gas composition as a whole.

* *Monatsbull. schweiz. Ver. Gas- u. Wasserfachm.*, **19** (1939), p. 189.

NEW PATENT

Heating Gas Streams

The Gas Light & Coke Company, L. Silver, and M. Maccormac have been granted a patent (No. 535,482; application date, Oct. 9, 1939) for apparatus for heating a stream of combustible gas.

For example it may be necessary in certain catalytic reactions involving gases to preheat the gas or mixture of gases in order to initiate the catalytic reaction. Or, again, in certain instances, a reaction between gases may be self-supporting once the gases have been raised to a certain temperature, as, for instance, in the Fischer Tropsch process. For such purposes, the heating of the gases can be discontinued after the reaction has been initiated. The patent is also applicable to gas purifiers where the impure gas requires to be brought to a certain temperature in order to maintain the activity of the purifying material, which may comprise iron oxide. In attempting to heat a stream of gas by introducing a limited supply of air locally into a gas stream and igniting it, it is found that there is a tendency for the resulting flame to be unstable and also to form soot which is deposited in the plant or on the catalyst. An object of the invention is to overcome these disadvantages.

According to the invention a method of heating a stream of gas consists in withdrawing from the main gas stream a quantity of gas which is mixed with air for combustion and re-introducing the mixture locally into the gas stream, either directly, or in cases where soot deposition is likely to occur, through a combustion chamber, and in igniting the mixture in the combustion chamber or gas stream. The amount of gas in the mixture may range from a deficiency to a slight excess of that which would be required for complete combustion with the air. By these means it is possible to control the ratio of gas and air in the mixture to be burnt and thereby provide a stable flame and prevent the formation of soot. The required quantity of gas may be withdrawn from the gas stream by the ejector action of a supply of compressed air which is also utilized for the combustion of the withdrawn gas.

An apparatus according to the invention thus comprises means for withdrawing from the main gas stream a quantity of gas to provide the required amount of heat for heating the gas stream, means for mixing the withdrawn gas with air for its combustion, and means for re-introducing the mixture locally into the gas stream either directly or through a combustion chamber, and means for igniting the mixture. As indicated, a compressed air ejector may be arranged to effect the withdrawal of the gas from the gas stream, to mix it with the required amount of air and to reintroduce the mixture into the supply conduits.

The compressed air ejector may comprise a nozzle which is directed into the end of a mixing passage which communicates with the combustion chamber and the inlet end of which passage also communicates with the chamber or conduit. For example, the nozzle may be located in an inlet chamber which communicates with the mixing passage and also communicates through an inlet conduit with said

Large

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1. The Tiffin County Girls' School. Radiation ap ances supplied to Surrey County Council.
2. Canteen Kitchen of Spratt's Patent Ltd. Radi Equipment installed by the Commercial Company.
3. A County Mental Hospital. Radiation appar installed by The Brightside Foundry & Engine Co. who also made and installed a number of st heated appliances.
4. An Industrial Canteen. Kitchen planned by local Gas Dept.
5. Another County school for Girls—Photograph courtesy of the Surrey County Council.

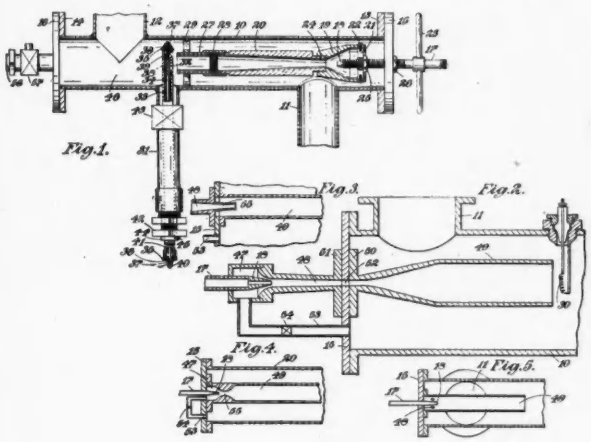
supply conduit. The inlet chamber may be located either inside or outside the supply conduit.

In order that the ratio of gas and air in the mixture may be accurately controlled, the inlet conduit may be provided with a control valve, or the passage may be provided with a calibrated restriction, or the distance between the injector nozzle and the throat may be varied. In an apparatus embodying a combustion chamber, the chamber may be arranged to extend in an axial direction within the supply conduit and is provided with an open end so as to direct the burning mixture in the same direction as the flow of the main gas supply. The combustion chamber may be cylindrical in shape and arranged co-axially with the supply conduit. In any of the arrangements referred to the mixing passage may be venturi in shape.

The outlet end of the mixing passage may comprise a nozzle which projects into the cylindrical combustion chamber. In such an arrangement the gas mixture either burns at the nozzle or at some intermediate point between it and the open end of the combustion chamber.

In a simple form of apparatus according to the invention, the combustion chamber may be located within the supply conduit and the walls may be provided with a number of ports and the air ejector nozzle may be arranged to project into the combustion chamber in the neighbourhood of the ports. Thus, a proportion of the gas stream is drawn through the ports into the combustion chamber by the ejector action of the nozzle. The combustion chamber and/or the mixing passage associated with it may be so shaped that the velocity of the gas-air mixture, after leaving the nozzle, decreases until it is approximately equal to the rate of propagation of a flame in the mixture.

In any of the arrangements referred to, a flame trap such as a metal spiral, a wire gauze, a porous refractory partition, a perforated plate, or a grid may be disposed either at the inlet end of the combustion chamber or within the combustion chamber. The air pressure



requires to be greater than that of the gas supply. The amount of gas in the mixture may be slightly in excess of that which would be required for complete combustion with the air supply, but not sufficient to cause soot.

The ignition of the mixture may be effected either directly or *via* a pilot jet by means of a wire formed from a platinum or nickel-chromium alloy which is electrically heated and which is disposed near the outlet end of the combustion chamber. Means may be provided for moving the igniting wire out of the path of the flame when the latter has been initiated. Alternatively the ignition means may comprise a spark gap.

The following is a description of a number of embodiments of the invention, reference being made to the accompanying drawings, in which fig. 1 is a sectional elevation through one form of device for heating a gas supply in which the air injector and combustion chamber for the heating mixture are within the casing through which the main gas supply flows ; fig. 2 is a similar view but of a diagrammatic character of a modified form of burner in which the injector is disposed outside the casing ; fig. 3 shows a modified form of construction shown in fig. 2 in which the injector projects into a combustion chamber located within the casing; fig. 4 is yet a further modification in which both the injector nozzle and the combustion chamber are arranged within the casing; and fig. 5 shows an arrangement in which the ports or passages through which the gas is withdrawn from the casing, are located within the casing.

Any of these devices may be fitted with a flame trap of the type referred to.

Referring now to the construction shown in fig. 1, the gas heating device comprises a cylindrical casing 10 having a laterally-extending gas inlet passage 11 and a gas outlet passage 12 disposed near the opposite ends of the casing. The ends of the casing are flanged at 13 and 14 respectively to which flanges are secured cover-plates 15 and 16. The cover-plate 15 near the gas inlet passage 11 is bored and threaded to receive a pipe 17 for the supply of compressed air. The end of the compressed air pipe is provided with an injector nozzle 18 which projects into one end of a venturi passage. The venturi passage is made in two main parts 19 and 20 which are secured together by a threaded spigot joint. The injector nozzle 18 projects into the open end of that part 19 of the venturi passage which has the greater divergence. A suitable divergence is provided by a passage whose diameter increases from $\frac{3}{4}$ in. to 2 $\frac{1}{16}$in. over a length of 2 in. Secured in the open end by set screws 22 is a spider member 21. The centre part of the spider is internally screw-threaded to receive the threaded end of the compressed air pipe 17 to which it is securely locked. The pipe may be rotated by an adjusting handle 23 whereby the distance between the open end of the venturi (19) and the back plate (15) can be adjusted; the required adjustment may be maintained by the lock-nut 26 which bears against the cover-plate 15. The part 20 of the venturi which is formed with the aforesaid throat 24 has a passage which diverges as it extends away from the throat from a diameter of $\frac{3}{4}$ in. to $1\frac{1}{2}$ in. over a length of 9 in. The end of the venturi part 20 remote from the throat is externally threaded and is connected with a combustion chamber 27 by a connecting piece 28 and a flame trap may be located within the connecting piece between the throat and the part 20. The combustion chamber is attached to a spider member 29 which locates the combustion chamber centrally within the cylindrical casing but leaves it free to move axially. Located opposite to the combustion chamber is an igniting device designated generally by the reference 30 which is mounted within a housing 31. The igniting device comprises an electric heating element 32 which is located in a slot 38 in a sleeve 33 and is connected at one end to the sleeve which sleeve extends through said housing. The other end of the element is connected to a steel rod 34 which is screw-threaded at its extremities. The steel is carried at its extremities by flanged insulating-bushes 36 which are held in cover-plates 35 secured to the ends of the sleeve 33. The steel rod is prevented from endwise movement by nuts 37 which bear against the flanges of the insulating bushes. Terminal nuts 39 are provided on the steel rod for establishing an electrical connexion with the electric element. Similarly, nuts 40 are provided for connecting the steel rod to a source of electric supply. The steel rod is encircled within the sleeve 33 by a glass tube 41 or by a tube of some other suitable insulating material. The housing 31 is provided with a gland 42 for holding the outer end of the sleeve in position, while the inner end is passed through a clearance hole in the cock 43 which is used to shut off the gas when the igniting device is withdrawn. In order that the electrical element may be correctly located opposite the combustion chamber, the sleeve 33 is provided with a locating collar 44 which may be slid along it and secured in the desired position by a grub-screw 45; the sleeve is then slid into the housing until the locating collar abuts against the gland 42.

The operation of the device is as follows: Assuming a flow of gas is taking place through the cylindrical casing around the outside of the venturi tube from the inlet pipe 11 to the outlet pipe 12, and that the injector action of the venturi has been rendered inoperative by bringing the part 19 of the venturi against the back plate 15 which is effected by rotating the burner pipe 17 after loosening the nut 26, then the burner may be lighted by switching on the electric supply to the heating element 32 after which the compressed air supplied through the pipe 17 is slowly turned on. As soon as the flame appears (as seen through the sight glass 56 and cock 57), the igniting device is withdrawn and the cock 43 closed. The venturi is then rendered effective by rotating the burner pipe 17 by means of the handle 23 so as to separate the port 19 of the venturi from the back plate 15 until the required volume of gas is being drawn into the burner. This causes the flame to retreat into the combustion chamber 27 where it burns in a stable manner without formation of soot. If the mixture of gas and air which is being supplied to the combustion chamber still contains an excess of air some secondary combustion will continue to take place at the mouth of the burner, but as a rule this also does not form any soot.

Referring now to the construction shown in fig. 2, the injector nozzle 18 of the compressed air pipe 17 is located outside the cylindrical casing 10, within an inlet chamber 47. The inlet chamber communicates through a mixing passage 48 with a combustion chamber 49 located within the casing 10. The mixing passage is formed in two parts having flanges 50 and 51, which are secured on either side of the cover-plate 15, which cover-plate is provided with an orifice 52 which forms a part of the mixing passage. The mixing passage diverges on either side of said orifice and may be separated from the combustion chamber by any suitable type of flame trap. Gas is led from the casing 10 into the inlet chamber through an inlet conduit 53 which engages an aperture in the cover-plate 15. In order that the ratio of gas and air mixture may be controlled the pipe is provided with a suitable control cock 54. Alternatively means may be provided for varying the distance which the nozzle 18 projects into the mixing passage. An igniter 30 is arranged opposite the mouth of the combustion chamber 49 and means are provided for removing the igniting wire out of the stream of hot gas by rotating the plug on which it is carried. With this arrangement also the flame is mostly confined to the combustion chamber from which the hot products of combustion flow into the main gas stream and heat it.

In the arrangement shown in fig. 3, the mixing passage 48 is provided with a nozzle 55 which extends into the combustion chamber 49.

In the construction shown in fig. 4, the end of the combustion chamber 49 within the casing 20 is formed with an inlet chamber 47 and a venturi passage 55 into which the nozzle 18 of the compressed air pipe 17 projects.

In the construction shown in fig. 5, the venturi passage and inlet chamber are dispensed with and injector nozzle 18 projects directly into the combustion chamber. The combustion chamber is provided with a number of inlet holes 48 near that end thereof which is attached to the cover-plate 15. The injector nozzle is arranged near the inlet holes 48 through which the gas in the casing 10 is drawn into the combustion chamber.

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Gas Products Prices

The London Market

June 9.

The prices of Tar Products in the London Market remain to-day approximately as follows:

Pitch is nominal; creosote 4¾d. to 5d.; refined tar 3¾d. to 4d.; pure toluene under the Ministry of Supply Toluene No. 2 Order is 2s. 5d.; pure benzole is 1s. 10d.; 95/160 solvent naphtha 2s. 5d. to 2s. 8d.; and 90/160 pyridine 13s. 6d.; all per gallon naked; refined crystal naphthalene £23 per ton in bags; all prices are *ex* Makers' works.

Tar Products in Scotland

GLASGOW, June 7.

A satisfactory throughput is maintained in this district with prices continuing steady to firm.

Refined tar is moving more rapidly with home value controlled at 4½d. to 4¾d. per gallon. Export supplies are available at 3¼d. to 3½d. per gallon, both f.o.r. naked.

Creosote oil is readily disposed of as available with prices steady as under: Specification oil, 5d. to 5¼d. per gallon; low gravity, 6d. to 6½d. per gallon; neutral oil, 5¾d. to 6d. per gallon; all *ex* Works in bulk.

Cresylic acid is well sold forward in this district and prices are therefore nominal as under: Pale, 99/100%, 2s. 11d. to 3s. 1d. per gallon; Pale, 97/99%, 2s. 7d. to 2s. 9d. per gallon; Dark, 97/99%, 2s. 4d. to 2s. 6d. per gallon; all *ex* Works in buyers' packages.

Crude naphtha is changing hands as available at round 6½d. to 7½d. per gallon *ex* Works in bulk, according to quality.

Solvent naphtha: 90/160 grade is 1s. 8½d. to 1s. 9d. per gallon and 90/190 Heavy Naphtha is 1s. 4½d. to 1s. 5½d. per gallon.

Pyridines remain uninteresting at about 14s. per gallon for 90/160 grade and 16s. per gallon for 90/140 grade.

The Provinces

June 9.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 1s. 10d. (controlled by the Control of Toluene No. 2 Order, July 5, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 10d. to 11d. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha North, 1s. 6d. to 1s. 7½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 4¾d.; Scotland, 4½d. to 4¾d.; low gravity, 4½d. to 4¾d. Fuel Grade, 4d. to 4½d. Carbolic acid, 60's, 3s. 7½d. to 3s. 9d. Naphthalene, £12 to £15. Salts, 70s. to 80s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil (min. gr. 1,080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note in our issue of Sept. 4, 1940, p. 404.

Dividend Statements

Brisbane

For the half-year ended Dec. 31 last, the Brisbane Gas Company are paying a dividend of 3½%, which is at the same rate as twelve months ago. The demand for gas has been well maintained. Extensions of mains during the half-year totalled 4 miles, and over 7 miles of new services were laid. At the end of 1940 the consumers totalled 35,110, while home service calls numbered 6,944.

Imperial Continental Gas Association

In their report for the year to March last, the Directors of the Imperial Continental Gas Association point out that, as the French and Belgian Companies in which the Association is interested operate in enemy-occupied territory, with which communication is prohibited, no information is available in regard to their results. The audited statement of accounts for the twelve months shows a net surplus of income over expenditure, strictly relevant to that period, of £71,730, but of this sum £70,000, together with £75,000 transferred from General and Specific Reserves, has been applied to provide cover for taxation assessments on foreign income relating to previous years, against which an appeal has been lodged. In these circumstances they regret that they cannot recommend the payment of a dividend.

South Midland Corporation

Payment of a dividend of 5½% for the twelve months to March 31 last by the South Midland Gas Corporation, Ltd., leaves a balance to be carried forward of £951. A year ago the dividend was at the same rate, the carry forward being £887.

Gas Stocks and Shares

The turnover in the Stock Market continued small last week and at the opening the tone generally was dull. The deterioration of Anglo-French relations caused a falling off in the support for British Funds, and although there were a few fractional price changes during the week quotations on the whole closed without change—2½% Consols were marked x.d. on June 3 and finished ½ down at 78½. Home rails suffered some small losses although the section steadied up towards the end of the week. There were a few bright spots among industrials, the latest extension of rationing adversely affected store shares and tobaccos were influenced by the drop in the interim payment by British-American tobacco. Home bank shares, however, were a strong feature. The tendency of the oil market was towards lower levels. Under the influence of a local demand Kaffirs showed a brighter appearance.

There was very little business done in the Gas Market last week and although there were a few price changes, all, with one exception, were in a downward direction. South Metropolitan was marked down another point, while several preference issues went to wider margins. The only increase was in Bristol 5% deb., which closed 2 points higher at 110½, although the Company's maximum stock fell a point to 86; Sheffield also closed a point lower.

The accounts of Primitiva Holdings show a net profit of £61,319 for the year to April 30 against £65,333 for 1939/40. After transferring £5,000 (the same) to General Reserve the directors are recommending a dividend on the ordinary stock of 4% as compared with 3½% a year ago. The carry forward is slightly more at £122,520. The £1 stock is now quoted at 6s. 6d.

The following price changes were recorded during the week:

OFFICIAL LIST

	19/—21/—	June 3
Bombay (x.d.)	75—80	—3
Croydon max. div.	30—35	—2¼
Gas Light & Coke, 3½ p.c. max.	48—53	—1
,, 4 p.c. Pref.	67—72	June 3
,, 3 p.c. Ded. (x.d.)	102—107	,,
,, 5 p.c. Deb. (x.d.)	99—104	,,
,, 4½ p.c. Ded. (x.d.)	29—34	—1
South Metropolitan Ord.	70—80	—2½
,, 6 p.c. Pref.	70—80	—2½
South Suburban 5 p.c. Pref.		

PROVINCIAL EXCHANGES

Bristol 5 p.c. max.	85—87	—1
,, 5 p.c. Deb.	109—112	+2
Sheffield Cons.	108—110	—1

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En passant

Men at some time are masters
of their fates:
The fault is not in our stars,
But in ourselves, that we are underlings.
Shakespeare (Julius Cæsar).

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